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## Psychological assessment of patients with Meniere's disease

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## Key Words

Menière's disease  
Psychological  
Quality of life  
Coping  
Personality

# Psychological assessment of patients with Menière's disease

## *Evaluación psicológica de pacientes con enfermedad de Menière*

### Abstract

The objective of this study was to evaluate daily stressors, coping, personality, physical and mental health, and quality of life in Menière patients. 110 consecutive patients with definite Menière's disease were assessed using the Dutch Daily Hassles List, Coping Inventory for Stressful Situations (CISS), Symptoms Checklist 90 (SCL-90), NEO Five Factor Inventory (NEO-FFI), General Health Questionnaire (GHQ-12), and the Short Form Health Survey 36 (SF-36). Duration and subjective severity of symptoms were scored using a self-report questionnaire. It was shown that Menière patients had more daily stressors, used certain coping strategies less often, and had more psychopathology (e.g. anxiety and depression), and a worse quality of life compared to healthy reference groups. No abnormalities in personality were found. Patients with more severe symptoms had more psychopathology and a worse quality of life than patients with mild symptoms. The psychological profile of Menière patients seems comparable to patients with other chronic diseases. The outcomes should be used to intensify psychological support in patients with this disabling disease.

### Sumario

El objetivo de este estudio fue evaluar los factores de estrés cotidiano, la capacidad de manejo de problemas, personalidad, salud física y mental, y calidad de vida en pacientes con Menière. Se evaluaron 110 pacientes con enfermedad de Menière confirmada utilizando la Lista Holandesa de Problemas Diarios, el Inventario de Manejo de Situaciones Tensionógenas (CISS), el Listado 90 de Síntomas (SCL-90), el Inventario NEO de Cinco Factores (NEO-FFI), el Cuestionario General de Salud (GHQ-12) y la Encuesta de Salud de Fórmula Corta 36 (SF-36). Se anotó la duración y la severidad relativa de los síntomas usando un cuestionario de auto-reporte. Se mostró que los pacientes con Menière tenían más factores cotidianos de estrés, utilizaban menos a menudo ciertas estrategias para enfrentar dificultades, y tenían más psico-patología (p.e., ansiedad y depresión) y una peor calidad de vida que los grupos saludables de referencia. No se encontraron anomalías de personalidad. Los pacientes con síntomas más severos tenían más psico-patología y peor calidad de vida que los pacientes con síntomas leves. El perfil psicológico de los pacientes con Menière parece comparable el de pacientes con otras enfermedades crónicas. Los resultados pueden utilizarse para intensificar el apoyo psicológico a los pacientes con esta enfermedad tan discapacitante.

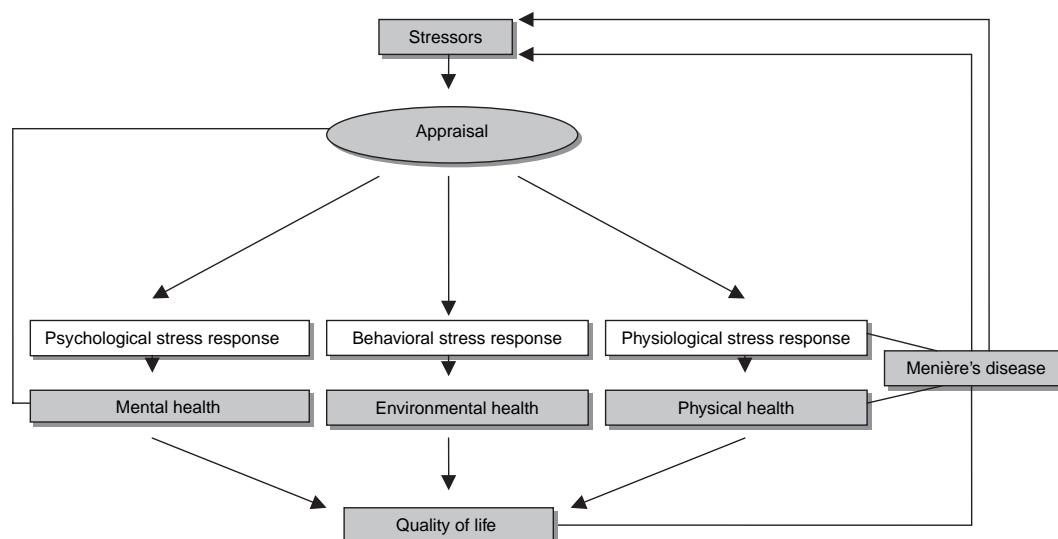
Menière's disease is a chronic, stressful disease with disabling symptoms such as (fluctuating) hearing loss, tinnitus and spontaneous vertigo attacks. The exact pathogenesis remains unknown, but the endolymphatic hydrops is the most commonly used pathophysiologic substrate (Merchant et al, 1995). Hydrops is supposed to be caused by a congenital or acquired reduction in endolymph absorption and a temporarily increased production of endolymph (Dunnebie et al, 1997). Its unpredictable character makes it a stressful disease.

Menière's disease is amongst the conditions in which psychological factors are often emphasized. The early literature on psychological considerations in Menière's disease focused on the psychosomatic causes and somatopsychic effects of the disease (Crary & Wexler, 1977; Hinchcliffe, 1967). Neither the psychosomatic or somatopsychic theory does seem to be the sole clarification for the development of Menière's disease. Most of the studies are methodologically weak and provide no definitive support for the claims made (Van Cruijssen et al, 2003).

Earlier studies have shown that Menière patients experience more anxiety, depression and phobia (Coker et al, 1989; Martin et al, 1991; Takahashi et al, 2001), while others did not (Savastano

et al, 1996). It was also shown that Menière patients experience the same level of anxiety, depression and somatic complaints compared to patients with only vertigo (Monzani et al, 2001). In the field of personality characteristics, previous studies have described Menière patients as obsessive-compulsive persons, perfectionists and neurotics, who are supposed to be more vulnerable and have more stress exposure (Groen, 1983; Savastano et al, 1996; Stephens, 1975). On the other hand, other researchers classified the personality of Menière patients in the normal range (Sawada et al, 1997). A time-series analysis of stress and vertigo expression did not support the role of stress as a precursor of symptoms in Menière's disease (Andersson et al, 1997). On the contrary, Söderman et al did find that emotional stress increased the risk of getting a vertigo attack (Söderman et al, 2004).

The former studies evaluated specific aspects of the psychological process. More likely, the disease is characterized by a continuous interaction of many psychological, physical, and environmental factors: symptoms of the disease worsen the emotional state, which in turn impairs the (perception of) symptoms. To our knowledge, all these factors have never been evaluated simultaneously in one study. To outline the psychological process



**Figure 1.** Multi-factor model of Menière's disease.

in Menière's disease, a general model of stress with stressors (physical and psychological disturbances), appraisal (coping and personality), and stress responses (psychological, physical and behavioural) is presented (Figure 1). All elements have their specific place and interrelate in this model. Whether the disease or the psychological condition presents first, remains unresolved and is probably irrelevant. More important is to know how the emotional and physical factors interact, and why one patient develops more frequent and severe problems after getting Menière's disease than others.

Information about this psychological process and its factors might give us better insight into which Menière patients are most at risk, and in what way psychological support needs to be intensified. In this study, each factor in the model is qualified and quantified by means of validated, standardized measures containing the appropriate psychometric properties. Several self-report questionnaires were selected to assess daily stressors, coping, personality, physical and mental health, and quality of life.

We hypothesized that Menière patients have more daily stressors, cope with stressors less adequately, report more psychological symptoms, and have a worse quality of life than healthy reference groups. Moreover, we explore personality traits that make Menière patients more vulnerable for stressors.

## Patients and Methods

### *Study population*

Every week one patient suspected of Menière's disease is admitted to our Otorhinolaryngology ward for three consecutive days to confirm the diagnosis of Menière's disease and to exclude other audiovestibular diseases, using various tests. The diagnostic work-up includes standard ear, nose and throat-examination, several audiometric and vestibular tests, MRI-scanning of the cerebellopontine angle, laboratory tests, and evaluation of symptoms using standardized questionnaires. Two weeks prior to admission all patients stopped their antivertiginous medication, including anxiolytics. Patients were considered

to be suffering from Menière's disease if they had a history of at least two vertigo attacks lasting longer than 20 minutes, tinnitus, and sensorineural hearing loss of at least 60 dB summed from the three worst octaves in the same ear, while other pathology was excluded. Aural fullness was not a requirement of the diagnosis, but could be present as well.

From January 2002 to January 2005, 132 consecutive patients with audiovestibular symptoms were admitted for clinical assessment. We diagnosed 111 patients with Menière's disease and 21 individuals (16%) with other pathology, after evaluation of all the test results. This other pathology included acoustic neurinoma, otosclerosis, neuritis vestibularis, ototoxicity, benign paroxysmal positional dysfunction, migraine, hereditary hearing loss, and partial epilepsy. Those patients with other audiovestibular diseases were considered as a control group. One Menière patient could not participate in the psychological assessment because of language problems. Of the 110 Menière patients, 81 were unilaterally (74%), and 29 were bilaterally (26%) affected.

The study population consisted of 67 male (61%) and 43 female (39%) patients with a mean age of  $52 \pm 12.1$  and  $52 \pm 10.3$  years, respectively. The male Menière patients had a total disease time of  $8.3 \pm 7.0$  years, compared to the female group  $8.0 \pm 6.0$  years. In this matching two outliers of the male group were excluded. They had a disease time of 36 and 56 years due to other ear problems. When they were included, the male total disease time was  $9.4 \pm 9.6$  years. The total disease time was not significantly different for gender with or without the outliers.

A similar proportion of men (31/67; 46%) and women (23/43; 54%) had another chronic disease. The extended Fletcher index for the male and female group was respectively  $53 \pm 20.3$  dB, and  $49 \pm 19.9$  dB. Male and female patients rated their hearing loss, tinnitus and vertigo of the past three months, and the last week comparable, and they had a similar frequency of vertigo attacks lasting longer than 20 minutes in the past three months. The female patients had a significantly lower alcohol intake ( $p < 0.001$ , Chi square test). The education level was comparable for both genders.

### *Psychological assessment*

During the clinical admission the psychological evaluation of Menière patients was performed using the following questionnaires:

1. The Daily Hassles List (APL) quantifies the frequency and intensity of problems in different circumstances (Vingerhoets & Van Tilburg, 1994). 112 situations are given, and have to be answered as to whether they had occurred in the past two months. If a positive reaction was given, it also had to be scored as to whether it was 'not a problem at all (0)', 'not so bad (1)', 'bad (2)' or 'very bad (3)'. A higher score implies more daily hassles.
2. Coping was assessed with the Coping Inventory for Stressful Situations (CISS, Endler & Parker, 1990). 48 strategies of coping with stressful situations are mentioned and have to be answered from 'not at all (1)' to 'very strongly (5)'. The CISS has three dimensions: task, emotion and avoidance oriented coping. The CISS has been translated and validated for the Dutch situation (De Ridder et al, 2004).
3. The NEO Five Factor Inventory (NEO-FFI, McCrae & Costa Jr., 1989) measures five personality domains: neuroticism, extraversion, openness to experience, altruism, and conscientiousness. 60 statements have to be answered on a five-point scale ranging from 'strongly disagree' to 'strongly agree'. Higher scores specify that the specific trait is more pronounced. The NEO-FFI has been translated into Dutch and validated for the Dutch cultural situation (Hoekstra et al, 1996).
4. The Symptoms Checklist (SCL-90) is a multidimensional self-report questionnaire measuring physical and psychological complaints on a scale from one to five (Arindell & Ettema, 1986; Derogatis, 1977). It encompasses 90 items containing eight dimensions: anxiety, agoraphobia, depression, somatic complaints, obsessive-compulsive behaviour, interpersonal sensitivity (personal inadequacy and inferiority), hostility, and insomnia. The total score is called psychoneuroticism, which is a measure for general level of psychological and physical dysfunction. Higher scores indicate more psychological or physical problems.
5. The General Health Questionnaire (GHQ-12) is designed to screen for minor psychiatric disorders in the general population (Koeter & Ormel, 1989). 12 items are scored as to whether the situation was 'better (0)', 'the same (0)', 'worse (1)' or 'much worse (1)' as usual, with higher scores corresponding with a worse mental health (Goldberg & Hillier, 1979).
6. The 36-item Medical Outcome Short Form Health Survey (SF-36) evaluates well-being and functional status (quality of life). It contains the following dimensions: physical, mental and social functioning, role limitations due to physical or emotional problems, general health perception, bodily pain, and vitality. Each dimension has several items with different scales; a lower score represents worse functioning in that specific dimension (Aaronson et al, 1998).

The Daily Hassles List is a free translation of the APL (Alledaagse Problemen Lijst), which is a standardized and validated Dutch questionnaire. The other five tests are internationally standardized and validated tests, which have been

translated into Dutch and validated for the Dutch cultural situation. The normative values of all tests match the Menière cohort for age and are given for gender.

Duration and subjective severity of symptoms were scored using a self-report questionnaire. The duration time of Menière symptoms (hearing loss, tinnitus and vertigo) was defined as the time between the first appearance of the symptom and the admission date. We defined the total disease time as the duration of the first presenting symptom. The duration of disease in those with bilateral disease was confined to the first affected ear. The subjective severity of the symptoms was assessed as perceived in the last three months. Hearing loss could be characterized as 'unchanged', 'improved', 'worse' or 'fluctuating'; tinnitus, aural fullness, and vertigo as 'none', 'mild', 'moderate' or 'severe'. The patients also had to score whether they had experienced vertigo attacks lasting more than 20 minutes in the past three months.

Furthermore, the symptoms of hearing loss, tinnitus, aural pressure, and vertigo had to be rated by the patients as 'none', 'mild', 'moderate' and 'severe' (1–4) as experienced in the past week. The total severity symptom score is a summation of these four separate scores (variance 4–16). The median total severity symptom score for the 110 patients was 10 and served as the cut-off point for creating the low (LSG) and high severity symptom group (HSG).

The presence of another chronic disease besides Menière's disease, alcohol and nicotine usage, and education level had to be noted as well. The hearing loss was defined as the extended Fletcher index over five pure-tone audiogram frequencies (250–4000 Hz).

Informed consent was obtained from all participants, and the study was approved by the medical ethics committee of our hospital.

### **Statistics**

Data are given in mean  $\pm$  standard deviation (SD). Statistical analyses were performed using the Student's t-test, Chi-square and Mann-Whitney-test. Two-tailed p-values were used for all tests. Pearson product-moment correlation coefficients were used to examine relationships between variables. If appropriate, we made Bonferroni corrections for multiple comparisons. For each test we set the alpha level at 0.05 divided by the number of comparisons. For instance, for 10 comparisons:  $p = 0.05/10 = 0.005$ .

### **Results**

Published normative data for all the questionnaires are derived from their respective manuals or papers (see methods section) and are given for gender. The results of the six questionnaires are presented in Tables 1 and 2. Some questionnaire test results had too many missing values and were therefore not used in the analysis. The main results are outlined below.

The Menière patients, male and female, experienced more daily hassles compared to the normative values (Table 1). Also, they were less task-oriented in their way of coping with stressful situations. Moreover, the male patients were also less emotion and avoidant-oriented in their coping (Table 1). The personality test (NEO-FFI) showed that the Menière patients had no

**Table 1.** APL, CISS, and NEO-FFI results of Menière patients and reference values

	<i>Menière patients</i>		<i>Reference values</i>	
	<i>Male (n)</i>	<i>Female (n)</i>	<i>Male (n)</i>	<i>Female (n)</i>
APL Frequency <sup>a</sup>	28.2 ± 13.3 (63) *	22.8 ± 15.9 (39) *	18.5 ± 13.0 (504)	15.8 ± 12.4 (602)
APL Intensity <sup>a</sup>	1.17 ± 0.45	1.27 ± 0.64	1.23 ± 0.51	1.24 ± 0.32
CISS Task oriented <sup>b</sup>	53.5 ± 11.5 (65) *	46.3 ± 12.4 (41) *	59.8 ± 8.4 (374)	60.9 ± 8.9 (309)
CISS Emotion oriented <sup>b</sup>	33.5 ± 9.2 *	38.0 ± 13.2	36.7 ± 10.1	40.2 ± 10.7
CISS Avoidant oriented <sup>b</sup>	36.8 ± 10.5 *	44.2 ± 11.3	46.6 ± 9.8	48.2 ± 9.7
NEO-FFI Neuroticism <sup>c</sup>	29.6 ± 8.6 (67)	33.8 ± 7.8 (42)	29.6 ± 7.8 (958)	32.2 ± 8.2 (1390)
NEO-FFI Extraversion <sup>c</sup>	37.4 ± 6.9	37.4 ± 6.6	39.8 ± 6.5	40.3 ± 6.6
NEO-FFI Openness <sup>c</sup>	36.3 ± 7.4	36.5 ± 5.9	35.4 ± 6.6	36.3 ± 6.3
NEO-FFI Altruism <sup>c</sup>	43.8 ± 5.0	47.2 ± 5.1	42.5 ± 5.1	45.1 ± 5.0
NEO-FFI Conscientiousness <sup>c</sup>	45.3 ± 6.0	45.9 ± 5.7	45.3 ± 5.7	45.3 ± 5.6

Values in mean ± standard deviation; \*  $p < 0.05$ , t-test, Bonferroni correction applied; reference values from <sup>a</sup> Vingerhoets & Van Tilburg, 1994; <sup>b</sup> De Ridder et al, 2004; <sup>c</sup> Hoekstra et al, 1996.

abnormal personality traits compared to the reference values (Table 1).

The SCL-90 results illustrated that the Menière patients experienced more psychological and physical problems (Table 2). A GHQ-12 score of more than one indicates psychopathology (Table 2). In that case, 63% of the Menière patients showed psychopathology. More specific, 71% of the female and 58% of the male Menière patients revealed psychopathology. According to the SF-36 scores (quality of life), the Menière patients had more limitations due to their restricted physical functioning. They had a worse general health perception and poorer social functioning with less vitality (Table 2). The SF-36 results are also shown in a bar graph to illustrate the differences from the control group and patients with migraine and rheumatoid arthritis (Figure 2). The mean values from the last two groups are from studies by Aaronson et al, 1998; and Kvien et al, 1998, and the exact values are presented in Table 3.

For further comparison the study population was divided into two subgroups; one with a short duration of disease ( $\leq 3$  years,  $n = 33$ ) and one with a long duration of disease ( $> 3$  years,  $n =$

77). The patients who were longer affected by the disease ( $> 3$  years) had significantly more daily stressors (APL), worse physical and social functioning, and more bodily pain (SF-36). They were also less vital (SF-36). Both groups did not differ in their psychometric results for coping strategies (CISS), personality traits (NEO-FFI), mental health (GHQ-12) and psychopathology (SCL-90).

The psychometric results of the 110 Menière patients and the results of the patients with other audiovestibular diseases (control group,  $n = 21$ ) were compared. This showed no significant difference in any of the psychological test results (Mann-Whitney test). The statistical comparison between these two groups is underpowered to detect differences in the psychological tests, because of the small size of the control group.

Both groups of patients with low and high severity symptom scores (LSG and HSG) were equally affected by the presence of other chronic diseases and had the same total disease time. The HSG experienced significantly more psychopathology (SCL-90) and a worse quality of life (SF-36) (Table 4). No differences in

**Table 2.** SCL-90, GHQ-12 and SF-36 results of Menière patients and reference values

	<i>Menière patients</i>		<i>Reference values</i>	
	<i>Male (n)</i>	<i>Female (n)</i>	<i>Male (n)</i>	<i>Female (n)</i>
SCL-90 Psychoneuroticism <sup>a</sup>	133.3 ± 34.4 (67) *	147.8 ± 38.5 (43) *	117.2 ± 27.3 (432)	128.9 ± 36.4 (577)
GHQ-12 <sup>b</sup>	2.24 ± 2.94 (66)	3.29 ± 3.39 (41)	< 1	< 1
SF-36 Physical <sup>c</sup>	79.3 ± 20.0 (67)	73.0 ± 20.7 (43)	85.4 ± 21.0 (976)	80.4 ± 24.2 (766)
SF-36 Role-physical <sup>c</sup>	59.9 ± 40.9 *	43.7 ± 43.7 *	78.7 ± 34.1	73.8 ± 38.5
SF-36 Bodily pain <sup>c</sup>	79.1 ± 23.2	71.0 ± 24.5	77.3 ± 22.7	71.9 ± 23.8
SF-36 General health <sup>c</sup>	59.3 ± 17.9 *	58.7 ± 20.1 *	71.6 ± 20.6	69.9 ± 20.6
SF-36 Vitality <sup>c</sup>	60.4 ± 20.1 *	55.1 ± 21.6	71.9 ± 18.3	64.3 ± 19.7
SF-36 Social functioning <sup>c</sup>	70.8 ± 24.1 *	66.8 ± 31.0 *	86.0 ± 21.1	82.0 ± 23.5
SF-36 Role-emotional <sup>c</sup>	79.8 ± 34.6	74.4 ± 39.1	85.5 ± 29.9	78.5 ± 35.7
SF-36 Emotional health <sup>c</sup>	73.4 ± 17.2	70.7 ± 18.7	79.3 ± 16.4	73.7 ± 18.2

Values in mean ± standard deviation, \*  $p < 0.05$ , t-test, Bonferroni correction applied; reference values from: <sup>a</sup> Arindell & Ettema, 1986; <sup>b</sup> Koeter & Ormel, 1989; <sup>c</sup> Aaronson et al, 1998.

**Table 3.** SF-36 results of Menière, control, migraine, and rheumatoid arthritis patients.

	<i>Menière patients (n = 110)</i>	<i>Control group (n = 20)</i>	<i>Migraine patients (n = 423)<sup>a</sup></i>	<i>Rheumatoid arthritis (n = 1030)<sup>b</sup></i>
Physical	76.9 ± 20.4	76.3 ± 27.0	82.4 ± 21.3 *	47.3 *
Role-physical	54.1 ± 42.4	62.5 ± 46.2	62.2 ± 40.8	27.0 *
Bodily pain	75.9 ± 23.9	71.3 ± 23.3	64.9 ± 22.4 *	41.0 *
General health	59.1 ± 18.7	56.8 ± 15.3	67.5 ± 20.5 *	42.0 *
Vitality	58.3 ± 20.8	55.3 ± 21.6	61.1 ± 18.6	39.4 *
Social functioning	69.2 ± 26.9	70.6 ± 32.0	76.2 ± 20.9	63.7
Role-emotional	77.7 ± 36.3	72.0 ± 42.0	74.5 ± 37.8	52.0 *
Emotional health	72.4 ± 17.8	66.6 ± 20.0	72.0 ± 18.7	68.1

Values in mean ± standard deviation, \*  $p < 0.05$ , t-test between Menière patients vs. control, and Menière patients vs. migraine patients, and Menière patients vs. rheumatoid arthritis patients, Bonferroni correction applied; <sup>a</sup>Aaronson et al, 1998; <sup>b</sup>Kvien et al, 1998.

daily stressors, coping or personality were found between the patients with mild and severe symptoms.

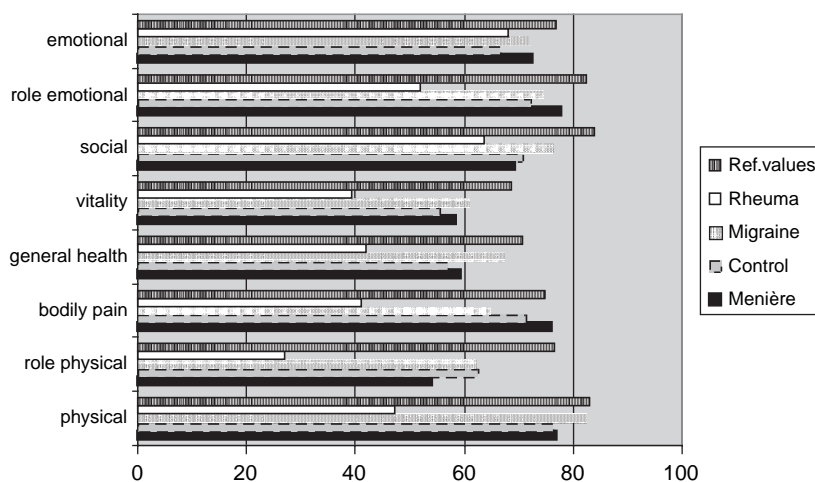
This study also showed some correlations between different psychological parameters, using Pearson product-moment correlation coefficients. Emotion oriented coping strategy use was positively correlated with neuroticism ( $r = 0.68$ ), and negatively correlated with conscientiousness ( $r = -0.21$ ). Also, emotion focused coping was correlated with psychoneuroticism ( $r = 0.49$ , SCL-90), general health ( $r = -0.30$ , SF-36) and mental health ( $r = 0.35$ , GHQ-12). Task oriented coping was positively correlated with extraversion ( $r = 0.32$ ). The total severity symptom score was significantly correlated to neuroticism ( $r = 0.27$ , NEO-FFI), psychoneuroticism ( $r = 0.39$ , SCL-90), general health ( $r = -0.29$ , SF-36) and mental health ( $r = 0.31$ , GHQ-12).

## Discussion

This study shows that Menière patients had a deviant psychological profile compared to published normed values. Menière patients experienced more daily stressors and used certain coping strategies less often. There was also more psychopathology and a worse quality of life in Menière patients. No abnormalities in personality were found.

To our knowledge no analysis has been carried out which evaluated all these separate factors in one study. The psychological test results seem comparable to other studies. The psychopathology (e.g. anxiety and depression) in Menière patients was also found by other researchers (Coker et al, 1989; Martin et al, 1991; Takahashi et al, 2001). The obsessive-compulsive and neurotic personality found by others, could not be confirmed in our study (Savastano et al, 1996; Stephens, 1975). On the contrary, Sawada et al did classify the personality structure in the normal range (Sawada et al, 1997). It remains difficult to compare these studies due to the use of different types of tests.

It has also been shown that Menière patients experience a bad quality of life, and vertigo seems to be the most influencing factor on the major implications of this disease on their daily lives (Cohen et al, 1995; Hagnebo et al, 1997; Söderman et al, 2002). A strong sense of coherence (ability to cope with stressful situations) appears to be an important predictor of Menière patients' perception of symptoms and quality of life, according to Söderman et al, 2001. They suggest that the quality of life or perception of the disease is also a result of the patient's ability to cope with difficult life situations. This is also suggested in our study with the positive correlation between emotion oriented

**Figure 2.** SF-36 results for Menière patients, control group, patients with migraine, patients with rheumatoid arthritis, and reference values (see also Table 3).

**Table 4.** Psychological results for the low (LSG) and high severity symptom group (HSG) of Menière patients.

	<i>LSG (n)</i>	<i>HSG (n)</i>
APL Frequency	27.2 ± 14.3 (52)	24.9 ± 14.8 (50)
APL Intensity	1.15 ± 0.50	1.27 ± 0.56
CISS Task oriented	52.3 ± 11.4 (54)	49.1 ± 13.2 (52)
CISS Emotion oriented	34.3 ± 10.5	36.2 ± 11.7
CISS Avoidant oriented	38.7 ± 10.8	40.6 ± 11.9
NEO-FFI Neuroticism	29.5 ± 8.7 (55)	32.9 ± 8.1 (53)
NEO-FFI Extraversion	37.8 ± 7.3	37.0 ± 6.2
NEO-FFI Openness	36.4 ± 6.5	36.3 ± 7.3
NEO-FFI Altruism	44.6 ± 5.3	45.6 ± 5.3
NEO-FFI Conscientiousness	46.3 ± 5.8	44.7 ± 6.0
SCL-90 Psychoneuroticism	129.0 ± 31.4 (55)	149.4 ± 39.1 (54) *
GHQ-12	2.11 ± 2.85 (54)	3.19 ± 3.40 (52)
SF-36 Physical	82.5 ± 17.7 (55)	71.2 ± 21.7 (54) *
SF-36 Role-physical	69.6 ± 39.0	37.7 ± 40.3 *
SF-36 Bodily pain	82.1 ± 20.6	69.2 ± 25.5 *
SF-36 General health	64.4 ± 18.2	52.9 ± 16.9 *
SF-36 Vitality	65.5 ± 17.6	50.3 ± 20.6 *
SF-36 Social functioning	79.2 ± 21.3	58.8 ± 28.4 *
SF-36 Role-emotional	81.2 ± 32.6	74.1 ± 39.8
SF-36 Emotional health	77.8 ± 13.3	66.5 ± 20.0 *

Values in mean ± standard deviation, \*  $p < 0.05$ , t-test, Bonferroni correction applied.

coping and psychoneuroticism (SCL-90), and a negative correlation with general health (SF-36). However, coping strategies and the frequency of daily stressors were the same in the low and high severity symptom group, while the quality of life was significantly worse in patients with more severe symptoms. This suggests that the severity of the symptoms has more effect on the quality of life, than coping or daily stressors in Menière's disease. Kinney et al also evaluated the quality of life of Menière patients with the SF-36 questionnaire (Kinney et al, 1997). In contrast to our findings, they found that patients with Menière's disease have a greater emotional, rather than physical, disability. It is difficult to compare both studies since Kinney included patients with surgical treatment and only unilaterally affected patients.

How do these results fit in our theoretical model? Firstly, it needs to be mentioned that causal relations are not justified because of the cross-sectional character of this study. It is not defendable to consider this model as causative. Therefore, the psychological aspects are presented as a descriptive study.

It seems obvious that patients with this unpredictable and disabling disease have more stressors. Nevertheless, patients with more severe symptoms did not experience more stressors than

the patients with mild symptoms, according to the APL scores. This could be explained by the fact that the general stressors which are mentioned in the questionnaire are not disease-related. The presence of more daily stressors next to disease-related stressors implies some overload of the stress system.

Menière patients recruited fewer task-oriented strategies for coping with stressful situations. This implies that they coped with stressors less adequately. There is much debate on which coping strategies are most adequate in which situations; task-oriented coping is generally more effective. People's ability to modify their coping according to situational demands is sometimes referred to as coping flexibility, which involves the systematic use of a variety of strategies across different situations, rather than the more rigid application of a few coping strategies (Folkman & Moskowitz, 2004). So, less use of coping strategies overall may be a sign for inadequate coping. Our results suggest that coping was a stable factor with prolonging disease time, but due to the cross-sectional design of this study we can not draw conclusions in this respect.

The fact that the psychological outcomes did not differ between Menière patients and patients with other audiovestibular disease, emphasizes the notion that the psychopathology seems to be the result of having a chronic disease. The psychological profile of Menière patients seems more or less comparable to those of patients with other chronic diseases. Patients with migraine and asthma also show more depression and anxiety disorders than normals (Centanni et al, 2000; Silberstein et al, 1995). Data show that patients with migraine and patients with chronic fatigue syndrome are more neurotic, and that the latter group also has lower self-esteem and are more introvert (Silberstein et al, 1995; White & Schweitzer, 2000). It is suggested that the neurosis is related to anxiety and depression, and a reaction to the chronic illness. Asthmatics do not seem to have specific personality traits (Huovinen et al, 2001). As shown in Figure 2 and Table 3, the quality of life in Menière patients appears to be more equivalent to migraine patients than rheumatoid arthritis patients (Aaronson et al, 1998; Kvien et al, 1998). The Menière patients had worse physical functioning, general health and social functioning, but less bodily pain than migraine patients. This could be explained by the continuously present tinnitus and hearing loss in Menière patients, which could give more physical problems and no real painful moments as a result of the disease. Rheumatoid arthritis has more impact on all the eight dimensions of the quality of life.

The knowledge of the specific psychological problems and the quality of life in patients with Menière's disease, gives us insight as to where, when, and how we should give psychological support. It was seen that Menière patients with longer disease duration had more daily stressors and worse quality of life in certain dimensions. Statements on changes in the psychological profile occurring over time can not be made due the cross-sectional character of the study. Furthermore, patients with more severe subjective complaints from their disease had more psychopathology, were more emotionally unstable, and had a worse quality of life. Patients with severe symptomatology did not differ in personality or coping from the ones with mild symptomatology. Therefore, the question why some Menière patients develop more intense symptoms than others, could not be answered from this study.

## Conclusions and recommendations

Menière patients have a deviant psychological profile compared to published normed values, but comparable to patients with other chronic diseases. Many psychological factors and the symptoms of the disease seem to interact. To interfere in this psychological process, we need to break in by reducing the severity of symptoms with hearing aids and medication. Next to that, the psychological support needs to be intensified where needed. The coping and psychopathology (e.g. anxiety and depression) should be approached by a psychologist or a psychiatrist. The impact of the disease on the daily functioning (mental, physical and social) should also be a point of attention. When Menière patients are helped with these issues, they function and feel better, and consequently handle their stressful disease more effectively.

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